IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

APELDYN CORPORATION, Plaintiff, v. AU OPTRONICS CORPORATION; AU OPTRONICS CORPORATION AMERICA; CHI MEI OPTOELECTRONICS CORPORATION; CHI MEI OPTOELECTRONICS USA, INC.; SHARP CORPORATION; SHARP ELECTRONICS CORPORATION; Defendants.	)	Civil Action No. 08-568-SLR **DEMAND FOR TRIAL BY JURY**

AU OPTRONICS CORPORATION AND AU OPTRONICS CORPORATION AMERICA'S OPENING BRIEF IN SUPPORT OF MOTION FOR SUMMARY JUDGMENT OF NON-INFRINGEMENT

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I. NATURE AND STAGE OF THE PROCEEDINGS

In this lawsuit, Plaintiff Apeldyn Corporation ("Apeldyn") has sued Defendants AU Optronics Corporation and AU Optronics Corporation America (hereinafter, collectively "AUO"), among other defendants, seeking damages in connection with the alleged infringement of U.S. Patent No. 5,347,382 ("the '382 patent"). The litigation was bifurcated as to damages in the March 9, 2009 Scheduling Order. *See* D.I. 59. Fact discovery has closed, and expert reports have been served on all issues. Claim construction is ongoing, with the Markman hearing scheduled for September 2, 2011.

II. SUMMARY OF THE ARGUMENT

1. The Accused Products do not satisfy the claim limitations directed to what the '382 Patent calls "impulse switching" based upon undisputed facts and therefore do not infringe.

2. The testing methodology of Apeldyn's expert, Dr. Kmetz, is inadequate to establish even a *prima facie* case that certain claim limitations are met and therefore Apeldyn cannot meet its burden of showing infringement as a matter of law.

III. STATEMENT OF FACTS

1. U.S. Patent No. 5,347,382 issued on September 13, 1994 containing claims 1-21 (the "'382 Patent"). *See* Declaration of Peter J. Wied ("Wied Decl.") Ex. A.

2. On March 22, 2011, the U.S. Patent and Trademark Office issued a reexamination certificate for U.S. Patent No. 5,347,382 adding claims 22-29. *Id*.

3. On April 11, 2011, Apeldyn served the Expert Report of Allan R. Kmetz, D.Eng. Regarding Infringement of U.S. Patent No. 5,347,382 by AU Optronics

Corporation and AU Optronics Corporation America (the "Infringement Report"). Wied. Decl. Ex. B.

IV. ARGUMENT

Summary judgment is appropriate "if the pleadings, the discovery and disclosure materials on file, and any affidavits show that there is no genuine issue as to any material fact and that the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c). The mere existence of some evidence in support of the nonmoving party is not sufficient for denial of a motion for summary judgment; there must be enough evidence to enable a jury reasonably to find for the nonmoving party on that issue. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 249, 106 S. Ct. 2505, 91 L. Ed. 2d 202 (1986). If the nonmoving party fails to make a sufficient showing on an essential element of its case with respect to which it has the burden of proof, the moving party is entitled to judgment as a matter of law. *See Celotex Corp. v. Catrett*, 477 U.S. 317, 322, 106 S. Ct. 2548, 91 L. Ed. 2d 265 (1986).

"Determining whether a patent claim is infringed requires a two-step analysis: 'First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process.'" *Nike Inc. v. Wolverine World Wide, Inc.*, 43 F.3d 644, 646 (Fed. Cir. 1994) (*quoting Carroll Touch, Inc. v. Electro Mechanical Sys.*, 15 F.3d 1573, 1576 (Fed. Cir. 1993)). To establish literal infringement, "every limitation set forth in a claim must be found in an accused product, exactly." *Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995). "If any claim limitation is absent from the accused device, there is no literal infringement as a matter of law." *Bayer AG v. Elan Pharm. Research Corp.*, 212

F.3d 1241, 1247 (Fed. Cir. 2000). The patent owner has the burden of proving infringement and must meet its burden by a preponderance of the evidence. *See SmithKline Diagnostics, Inc. v. Helena Lab. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988) (citations omitted).

To prove infringement by the doctrine of equivalents, a patentee must provide "particularized testimony and linking argument" as to the "insubstantiality of the differences" between the claimed invention and the accused product, or with respect to the function/way/result test." *See Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1996).

An expert's testimony is limited to information contained in his or her expert report. *See* Fed. R. Civ. P. 26(a)(2)(B)(i); *Moore N. Am., Inc. v. Poser Bus. Forms, Inc.*, 2001 U.S. Dist. LEXIS 9054 (D. Del. Mar. 8, 2001) (noting experts' testimony at trial " would be limited to the information contained in their expert reports."). It is appropriate to grant summary judgment if a theory of infringement is not adequately supported by the contents of a timely submitted expert report. *See Oracle Corp. v. Parallel Networks, LLC*, 2011 U.S. Dist. LEXIS 44036, 19-21 n.6 (D. Del. Apr. 25, 2011).

A. Plaintiff Cannot Prove that the Accused Products Meet All of the Claim Limitations

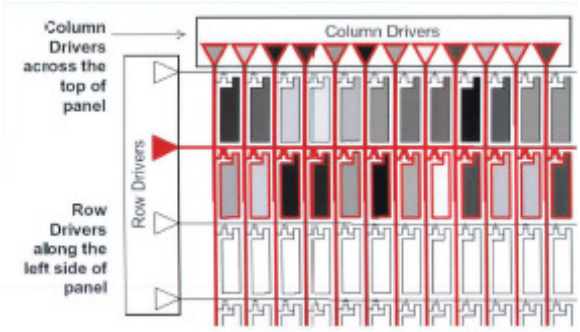
1. The Accused Products do not Have Signals with the Claimed Third Amplitude

The dispute here concerns the claim limitation relating to how each pixel of a liquid crystal display is driven in the accused products. By way of background, the accused products are active-matrix liquid crystal displays or LCDs, commonly referred to as flat panel displays. An LCD is essentially two plates of glass between which is sandwiched liquid crystal material. On one of the glass plates, semiconductor material is

used to form thin film transistors or TFTs. Each TFT is attached to a pixel electrode, and controls whether an electric signal is transmitted to the pixel electrode. Infringement Report ¶30. The liquid crystal portion corresponding to each pixel is, for purposes of this motion, analogous to the liquid crystal cell disclosed in the '382 Patent. The pixels are arranged in rows and columns with wires also laid out in rows and columns and arranged in a grid (loosely like a screen door, with each air space in the screen representing a pixel and the screen representing the wires). The electrode of each pixel must be supplied with an electrical current in order to work properly. Infringement Report ¶30. Applying the proper electrical current is what is referred to as "driving" the pixel.

The accused products are driven in a fundamentally different way than the invention of the '382 patent. Unlike the invention of the '382 patent, where there is a drive source for each liquid crystal cell and a driving signal is continuously applied to a liquid crystal cell, see '382 Patent Figs. 1 and 11, in the accused products pixels share a drive source (known as a data line) and each pixel is driven intermittently. Infringement Report ¶31. In fact, most of the time any given pixel is not being driven by the driver circuits.

Each pixel has a TFT that controls whether the signal on a data line is applied to the pixel. When a TFT is turned on, the signal can flow to the pixel electrode and is applied to the pixel; when the TFT is turned off, the signal on the data line is not applied to the pixel. Infringement Report ¶135. Because the pixels are arranged in an array of rows and columns, there are multiple pixels attached to each data line.



Therefore, it is important to only activate the TFT for that pixel when the appropriate signal is being applied to the data line. Assuming, for convenience, that the data lines are the columns of the LCD, this means that only one row of pixels can have their TFTs activated at a particular time; otherwise, pixels would receive signals intended for other pixels. Infringement Report ¶31. As can be seen in the diagram above, by activating the TFTs in a row the pixels in that row are driven to a particular brightness based upon the signal on the attached data line at that time.

An LCD produces the appearance of moving images by rapidly displaying a series of images with slight changes from image to image (similar to how a flipbook of still images creates the appearance of motion when flipped through rapidly). Each pixel can be controlled to display a particular color with a particular brightness, which produces an image similar to a dot painting. Infringement Report ¶30. A typical liquid display might change the image 60 times per second, meaning each image is displayed for only 1/60th of a second. (Each new image is sometimes referred to as a frame.) As just discussed, however, each pixel cannot be driven during the entire time that an image is displayed. As a result, each pixel can only be driven for a small portion of the time that the display shows a particular image. Taking the example of a display that has 1080 rows of pixels, each pixel can only be driven for 1/1080th of the time that the image is to be displayed.

Taken together, this means a given pixel can be driven for only 1/1080th of 1/60th of a second for each image. Apeldyn does not dispute this general operation of the accused products.

The method of driving a TFT in the accused products does not meet the claim limitation:

> first drive means, connected to said first retarder means, for supplying said first signal to said first retarder means, said drive means including first control means for changing said retardance from a first retardance to a second retardance by causing said first signal to change, in a direction to move toward said second retardance, from a first amplitude which is required for said first retardance to a second amplitude, beyond a third amplitude which is required for said second retardance, for a period of time, and then causing said first signal to change to the said third amplitude required for a second retardance.

'382 Patent at 9:63-10:7. Similar claim limitations are found in all other claims of the independent claims of the ‘382 patent. As can be seen, the claimed signal must have three amplitudes: a first amplitude corresponding to the first retardance, a third amplitude corresponding to the second retardance, and a second amplitude "beyond" the third amplitude.

Accepting (for purposes of this motion) Dr. Kmetz’s explanation of how the accused products work, an accused LCD determines what signal to apply to a given pixel by first determining the desired brightness (or graylevel) for the image currently being displayed (known as the N-1 frame) and the desired brightness (or graylevel) for the next image to be displayed (known as the N frame). Infringement Report ¶150. These two “graylevel” values are used with a lookup table to determine the value of the signal to be applied to that pixel during frame N in order to reach the target graylevel for frame N. *Id*. It is important to remember, however, that the signal found in the lookup table is not applied for the entire duration of frame N, but only for 1/1080th of the duration of frame

N. For the next frame (N+1) this process is again repeated, this time using the desired brightness for frames N and N+1 in the lookup table.

Using the example provided by Apeldyn's expert, Dr. Kmetz, *see* Infringement Report ¶150-151, assume the target value (which is the third amplitude of the patent claims) for frame N-1 is 32, the target value for frame N is 96 and the target value for frame N+1 also happens to be 96. For frame N, a voltage of 108 will be applied based on the lookup table. But no overdrive is necessary between frames N and N+1 because the target values of those two frames are the same, to wit, 96. Consequently, in this particular instance, the sequence of voltages for the three consecutive frames fortuitously is 32, 108 and 96, which Kmetz asserts correspond to the first, second and third amplitudes.

In the accused products, because there is only a single signal applied to the pixel during a particular frame, the signal is not caused to go from the overdrive value, which is the second amplitude of the '382 patent to the target value, which is the third amplitude required by the claims. Apeldyn attempts to skirt this reality by offering up the scenario where, after changing the target graylevel from frame N-1 (32) to N (96), which did involve an "overdrive" value for frame N (108), the target graylevel by chance remains the same for both frames N (96)and N+1 (96). In that circumstance, for frame N+1, the value from the lookup table will tell the LCD to apply the value associated with the target graylevel (96) during frame N+1; in other words, the LCD will not overdrive during frame N+1. Apeldyn wrongly asserts that this means the "third amplitude" or target graylevel is asserted for purposes of overdrive. But, the target value asserted for $1/1080^{th}$ of the duration of frame N+1 is not due to the overdrive function performed

during frame N, but reflects the fortuitous circumstance where the target value for N (96) and N+1 (96) happen to be the same value.

Such a situation does not, in fact, meet the actual language of the asserted claims. Claim 1, for example, requires that the third amplitude be the amplitude "which is required for said second retardance." The use of the term "said" is critical, since that means it must be the previously recited second retardance, here the target retardance for frame N in the above example, involved in the initial determination to overdrive. *See*, *e.g.*, *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008) (use of the definite articles "the" or "said" refers back to the same claim term). In the accused products, however, the signal applied after the overdrive value (namely, the signal in frame N+1 which was 96) is never based upon the target graylevel for frame N (96), but always on the target graylevel for frame N+1 (which fortuitously in Dr. Kmetz' example is also 96). The fact that under certain circumstances the target graylevel for frame N+1 will happen to match the target graylevel for frame N does not change the fact that there are distinct target graylevels for each frame. If the target graylevel for frame N+1 happened to be 128, the lookup table would apply a voltage of 136, not 96. But, in the example provided by Dr. Kmetz, no overdrive of any type is used if the target value for frame N and N+1 are the same. But, in the accused products, the overdrive employed does *not* involve returning to the target value since the signal is applied for only a fraction of a frame. Stated another way, the target value for frame N is at all times 96, and for the duration that a voltage is applied it remains at 108. The signal in frame N is never dropped to a third amplitude constituting the target value.

Each of the asserted independent claims has similar language indicating the third amplitude must be based upon the target retardance when applying the overdrive signal, each requires that the signal be set to the third amplitude based on the target graylevel of frame N, rather than frame N+1. Because Apeldyn's infringement theory is improperly based upon the target graylevels during multiple frames, rather than a single frame as required by the claim language, AUO should be granted summary judgment of noninfringement.

2. **Testing Inadequacies**

Each of the asserted claims requires a liquid crystal cell that has first and second eigen-axes. *See*, *e.g.*, '382 Patent at 9:58-62. Apeldyn has proposed that the first and second eigen-axis should be construed as follows:

> The first and second eigen-axes are orthogonal to one another and define a Cartesian coordinate system with the property that incident light propagating through the liquid crystal cell that is linearly polarized along either the first or second eigen-axis will remain linearly polarized and will exit the liquid crystal cell along the same eigen-axis independent of the applied voltage.

D.I. 486. To make a claim of infringement, Apeldyn must be able to prove that the accused products have such eigen-axes.

To understand the implications of Apeldyn's proposed construction, and the flaws in Apeldyn's testing methodology, it is useful to remember how liquid crystal cells operate. Liquid crystal cells are made by sandwiching liquid crystal material between transparent plate in such a way that a voltage can be applied to the liquid crystal material. *See*, *e.g.*, '382 Patent at 4:58-5:3. Changing the voltage applied to the liquid crystal material changes its optical properties, which in turn changes the properties of light

passing through the liquid crystal cell. *Id*. at 4:12-24. One of the properties of light that can be controlled by a liquid crystal cell is its polarization. *Id*. at 1:29-30.

Polarization refers to the orientation of the electric field component of light. *Id*. at 4:28-33. When the electric field component of light is all in the same plane, it is referred to as linearly polarized. Infringement Report ¶38. Light can be made linearly polarized in a particular direction by passing it through a polarizer, which will transmit light that is polarized in one direction and absorb light that is polarized in the opposite direct. One analogy is to think of passing objects through the gaps in a picket fence: objects which are oriented vertically like the fence will pass through, while objects oriented horizontally would be blocked by the slats of the fence. If two polarizers that are at 90 degrees to each other (e.g. one is horizontal and one is vertical) are put in a row, one would expect all of the light to be absorbed; this arrangement is often referred to as crossed polarizers.

Dr. Kmetz performed experiments to purportedly determine the polarization characteristics of the accused products. In particular, he used a polarizer to create linearly polarized light that he shone through the accused products. Infringement Report ¶117-120. Based on Apeldyn's claim construction, if the accused products have an eigen-axis and the linearly polarized light entering the liquid crystal cell is aligned along that eigen-axis, the light will remain linearly polarized along that same axis. If a polarizer is then placed at 90 degrees to that axis, one would expect all of the light to be absorbed. Infringement Report ¶120. If, on the other hand, the light had not remained linearly polarized, some of the light would be transmitted through the second polarizer. Dr. Kmetz's tests observed the amount of this transmitted light. Infringement Report ¶120-122; Infringement Report Exhibit 8 (Wied Decl. Ex. C).

a. **Photographs Inadequate**

Apeldyn's purported "confirmation" of the existence of eigen-axes consists of two photographs of accused products that show some areas that are relatively darker than others. Infringement Report Exhibit 8. The existence of an eigen-axis would result not just in relative darkness, but no transmission. Infringement Report ¶121. On this ground alone, Dr. Kmetz's "proof" of an eigen-axis fails, as light was clearly transmitted even along what Dr. Kmetz claimed to be the eigen-axis. Dr. Kmetz attempts to dismiss this as "leakage" but offers no basis for distinguishing between "leakage" and the transmission that would result from the lack of an eigen-axis. Without some explanation of the expected amount of leakage, Dr. Kmetz's claim that the clearly observable light is leakage is nothing more than a conclusory statement that the tested products have eigen-axes, which is insufficient to meet Apeldyn's burden and avoid summary judgment. *See Arthur A. Collins, Inc. v. Northern Telecom Ltd.*, 216 F.3d 1042 (Fed. Cir. 2000) ("First, it is well settled that an expert's unsupported conclusion on the ultimate issue of infringement is insufficient to raise a genuine issue of material fact. A party may not avoid that rule by simply framing the expert's conclusion as an assertion that a particular critical claim limitation is found in the accused device.") (internal citations omitted).

Moreover, visual observation of the accused products, cannot confirm that there is no transmission, because of the limited ability of the human eye to distinguish between areas of relative darkness. This limitation is further amplified when the visual observation is of a photograph, since the camera has limited ability to distinguish between relative dark levels; likewise, when the observation is of a reproduction of the photograph, the additional limitations of the reproduction mechanism (whether a printer or a computer

monitor) must be taken into consideration. Given all of these uncertainties, in the absence of actual measurement of light being transmitted (or the lack thereof), mere visual observation is insufficient to distinguish whether there is no transmission of light or just relatively low transmission. Since Dr. Kmetz provides only photographs and no actual measurements, his testing cannot establish the existence of eigen-axes in the accused products. Accordingly, even considering only the Dr. Kmetz's testing, Apeldyn has failed to establish even a *prima facie* case for the existence of eigen-axes in the accused products.

b. **Single Voltage**

Apeldyn's testing is also inadequate to establish a *prima facie* case for the existence of an eigen-axis under either Apeldyn or CMO's proposed constructions. Apeldyn's proposal requires, *inter alia*, that light linearly polarized along an eigen-axis must remain linearly polarized along the same axis as it travels through an LC cell "independent of the applied voltage." To establish that light in the accused products remains linearly polarized "independent of applied voltage," it would be necessary to test or observe the property at multiple voltages, to establish that it did not change. Dr. Kmetz, however, provides only a single photograph of the alleged eigen-axes at a single voltage. Infringement Report ¶121-124. A single data point such as this is inadequate, both as a matter of law and a matter of basic science, to establish that any property of the accused products is independent of applied voltage.

Similarly, CMO's proposed construction requires that the birefringent material does not twist light polarization while a signal is applied. Establishing that this limitation is met would, once again, require sufficient testing to cover the range of signals that are applied in the accused products. Instead, Dr. Kmetz has offered photographs of testing

under a single set of conditions; this is inadequate to demonstrate that there is no twisting of the light polarization when other signals are applied, as required by CMO's proposed construction.

Accordingly, should the Court adopt either Apeldyn's and CMO's proposed construction for eigen-axis, Apeldyn cannot establish that the accused products have an optical retarder (or retarder means) with a first and second eigen-axis, and summary judgment of non-infringement is therefore appropriate.

c. **Single Axis**

Apeldyn's testing is also inadequate to establish the existence of two eigen-axes that are orthogonal (i.e. at 90 degrees) to each other, as is required by Apeldyn's proposed claim construction. Even accepting Dr. Kmetz's interpretation that the photographs taken show an eigen-axis at 45 degrees, *see* Infringement Report ¶121, that establishes only one eigen-axis in the accused devices. There is no evidence of (and no indication that he even tested for) an eigen-axis at any other orientations, let alone that a second eigen-axis exists that is orthogonal to the first. Without evidence of this second eigen-axis, Apeldyn cannot establish the accused products meet the limitation of first and second eigen-axes and summary judgment is therefore appropriate.

B. <u>Indirect Infringement</u>

For a party to be liable for indirect infringement, i.e. contributory or inducement of infringement, it must have knowledge of the patent. *See Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321, 1326 (Fed. Cir. 2010) (contributory infringement requires knowledge of the patent); *Global-Tech Appliances, Inc. v. SEB S.A.*, 563 U.S. __, 179 L. Ed. 2d 1167, 1177 (2011) (inducement of infringement requires knowledge of the patent). Apeldyn does not, and cannot, contend, that it gave AUO notice of the asserted '382 Patent prior

to filing this lawsuit on September 8, 2008. Birdwell Depo. (Wied Decl. Ex. D) at 101:1-16. Accordingly, AUO is entitled to summary judgment of no indirect infringement prior to September 8, 2008.

V. CONCLUSION

Because Apeldyn cannot establish, under undisputed facts, that certain claim limitations are met, and because its expert's testing fails to present a *prima facie* case that other claim limitations are present in the accused product, Apeldyn cannot meet its burden to show infringement. AUO respectfully requests that it be granted summary judgment of noninfringement as to all asserted claims.

Respectfully submitted,

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